WHAT IS CLAIMED IS:

1. A method usable to reduce displacement errors in an image-correlation-based displacement measuring system, comprising:

determining an estimate of an error amount corresponding to an uncompensated displacement value, the uncompensated displacement value representing a displacement between a reference image and a displaced image,

wherein the estimate of the error amount is represented in the image-correlation-based displacement measuring system in relation to a displacement relative to an unspecified reference image position.

2. The method according to claim 1, further comprising generating the uncompensated displacement value based on a reference image and a displaced image.

3. The method according to claim 1, further comprising combining the estimated error amount and the uncompensated displacement value to determine a compensated displacement between the reference image and the displaced image.

4. The method according to claim 1, wherein:

the estimate of the error amount is one of a plurality of error estimates represented in the image-correlation-based displacement measuring system in relation to displacements relative to an unspecified reference image position; and

the displacements relative to an unspecified reference image position cover a range which is a significant portion of the maximum displacement range usable with a single reference image in the image-correlation-based displacement measuring system.

5. The method according to claim 1, wherein the estimate of the error amount is represented in a form comprising a look-up table.

6. The method according to claim 5, wherein the estimate of the error amount is represented in a form comprising a value based on interpolation between values represented in the look-up table.

7. The method according to claim 1, wherein:

the estimate of the error amount is represented in a form comprising an error function representing the errors observed in the uncompensated displacement values determined by the image-correlation-based displacement measuring system

over a significant portion of a maximum displacement range usable with a single reference image in the image-correlation-based displacement measuring system; and

the error function includes at least a component related to a general curvature of the observed errors, the general curvature extending over a significant portion of the maximum displacement range usable with a single reference image in the image-correlation-based displacement measuring system.

8. The method according to claim 7, further comprising fitting the error function to a difference between reference values and uncompensated displacement values, wherein the reference values represent displacements between the reference image and displaced images, and wherein the uncompensated displacement values represent displacements between the reference image and the displaced images.

9. The method according to claim 8, further comprising minimizing the difference between the error function and the reference values.

10. The method according to claim 7, wherein the error function includes a first periodic component related to a periodic image-correlation interpolation error.

11. The method according to claim 10, wherein the error function includes a second component which modifies the amplitude of the first periodic component over a range which is a significant portion of the maximum displacement range usable with a single reference image in the image-correlation-based displacement measuring system.

12. An apparatus usable to reduce displacement errors in an image-correlation-based displacement measuring system, comprising:

a module determining an estimate of an error amount corresponding to an uncompensated displacement value, the uncompensated displacement value representing a displacement between a reference image and a displaced image,

wherein the estimate of the error amount is represented in the module in relation to a displacement relative to an unspecified reference image position.

13. The apparatus according to claim 12, further comprising a module generating the uncompensated displacement value based on a reference image and a displaced image.

14. The apparatus according to claim 12, further comprising a module combining the estimated error amount and the uncompensated displacement value to

determine a compensated displacement between the reference image and the displaced image.

15. The apparatus according to claim 12, wherein:

the estimate of the error amount is one of a plurality of error estimates represented in the module in relation to displacements relative to an unspecified reference image position; and

the displacements relative to an unspecified reference image position cover a range which is a significant portion the maximum displacement range usable with a single reference image in the image-correlation-based displacement measuring system.

16. The apparatus according to claim 12, wherein the estimate of the error amount is represented in a form comprising a look-up table.

17. The apparatus according to claim 16, wherein the estimate of the error amount is represented in a form comprising a value based on interpolation between values represented in the look-up table.

18. The apparatus according to claim 12, wherein:

the estimate of the error amount is represented in a form comprising an error function representing the errors observed in the uncompensated displacement values determined by the image-correlation-based displacement measuring system over a significant portion of a maximum displacement range usable with a single reference image in the image-correlation-based displacement measuring system; and

the error function includes at least a component related to a general curvature of the observed errors, the general curvature extending over a significant portion of the maximum displacement range usable with a single reference image in the image-correlation-based displacement measuring system.

19. The apparatus according to claim 18, further comprising a module fitting the error function to a difference between reference values and uncompensated displacement values, the reference values represent displacements between the reference image and displaced images, and

wherein the uncompensated displacement values represent displacements between the reference image and the displaced images.

20. The apparatus according to claim 19, further comprising a module that minimizes the difference between the error function and the reference values.

21. The apparatus according to claim 18, wherein the error function includes a first periodic component related to a periodic image-correlation interpolation error.

22. The apparatus according to claim 21, wherein the error function includes a second component which modifies the amplitude of the first periodic component over a range which is a significant portion of the maximum displacement range usable with a single reference image in the image-correlation-based displacement measuring system.

23. The apparatus according to claim 12, wherein the apparatus is a computer readable medium and wherein the module is control program stored on the computer readable medium.

24. A carrier wave encoded to transmit a control program to a device capable of executing the control program, the control program usable to reduce displacement errors in an image-correlation-based displacement measuring system, the control program comprising:

instructions for determining an estimate of an error amount corresponding to an uncompensated displacement value, the uncompensated displacement value representing a displacement between a reference image and a displaced image,

wherein the estimate of the error amount is represented in one of the control program and the image-correlation-based displacement measuring system in relation to a displacement relative to an unspecified reference image position.